

Adler

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Cambridge, Massachusetts

MEMO

TO: Distribution  
FROM: George W. Cherry  
DATE: 23 October 1968  
SUBJECT: Preparation for the LUMINARY FACI Reviews to be Held at MIT/IL  
During the Week of November 11, 1968 and/or the Week of  
November 18, 1968.

During the week of November 11, 1968 and/or possibly the week of November 18, 1968, NASA/MSC personnel from various organizations will come to MIT/IL to investigate in detail each of the Level III and Level IV test runs made on LUMINARY. The purpose of these reviews is for each of the MSC organizations to state at the ensuing FACI meeting that the programs have been checked thoroughly and are capable of flying the mission or missions for which they were designed.

Each of the Level III and Level IV tests will be reviewed by at least one and sometimes as many as three MSC review groups. The MSC review groups and their chairmen are:

| <u>GROUP</u>                     | <u>MSC CHAIRMAN</u> |
|----------------------------------|---------------------|
| 1. Digital Autopilot             | Bill Peters         |
| 2. Ascent/Descent                | Floyd Bennet        |
| 3. Powered Flight and Targetting | Rick Nobles         |
| 4. Navigation and Alignments     | Bob Savely          |
| 5. Rendezvous                    | Bob Regelbrugge     |
| 6. Uplink/Downlink               | Sam Ankney          |
| 7. Systems Test                  | Clark Hackler       |

MIT/IL support of these reviews is extremely important. All engineers and programmers who have participated in designing, programming and testing LUMINARY should be present between 11 November 1968 and 22 November 1968. You will no doubt be asked many questions. In some cases you will be asked to make an additional run by the review team. The review team may also be empowered to direct anomaly repair on the spot and issue action items (for example, to make an additional run).

A test like LUMINARY L4. 24, which was carried out by Bob Covelli from 23B and Wayne Tempelman and Cynthia Carrol from 23A, will probably be reviewed by two of the review teams - by group (3) because of P39 and P42 and by group (4) because of P52. Thus, Wayne might make himself available to answer questions asked by group (3) and Cynthia to answer questions asked by group (4). LUMINARY test L4. 14 done by Frank Gaunt and Peter Volante of 23B and Wayne Templeman and Cynthia Carroll of 23A, would probably be reviewed by group (3) because of P38 and P42, by group (4) because of P20 and by group (5) because it is a stable orbit rendezvous sequence. Thus, Peter Volante (who is a P20 expert) would associate himself with group(4), Frank Gaunt would associate himself with, say, group (5), and Wayne Tempelman associate himself with group (3).

In general, MIT/IL folks who are specialists or experts in some particular functional area, should try to spend the review days in the company of the appropriate NASA defined functional group. The following list represents tentative assignments for MIT/IL personnel to the MSC specialist groups.

| <u>GROUP</u>         | <u>MIT/IL PERSONNEL</u>  |
|----------------------|--|
| 1. Digital Autopilot | Bill Widnall, Don Keene, Peter Weissman, et al.  |
| 2. Ascent/Descent    | Bob Covelli, Don Eyles, Bernie Kriegsman, Don Gustafson, Allan Klumpp, Larry Berman for ascent (P12) and aborts (P70 & P71), Walter Bernikowich for P70 & P71. |



| <u>GROUP</u>                  | <u>MIT/IL PERSONNEL</u>  |
|-------------------------------|--|
| 3. Powered Flight/ Targetting | Peter Adler, Pete Philliou & Ray Morth for powered flight, Pat White, Jane Goode & Wayne Tempelman for Targetting. |
| 4. Navigation and Alignments  | Peter Volante, Gerry Levine & Peter Kachmar for Navigation; Don Millard & Bob White for Alignments.                |
| 5. Rendezvous                 | Gene Muller, George Cherry or Jim Kernan for Rendezvous.   |
| 6. Uplink/Downlink            | Craig Schulenberg or Jim Kernan, Paul Fagin & Mike Albert.   |
| 7. Systems Test               | Ain Laats, George Edmonds, Ed Grace, & Len Johnson.  |

All the groups will have one or two personnel from the MSC Flight Crew Support Division. Similarly, we should have a 23D individual assigned to most of the groups or at least floating among the groups. I would expect, therefore, that Jim Nevins would assign Russ Larson, Ivan Johnson, Jack Dunbar, et al to some of the FACI review groups.

#### Individuals Responsible for LUMINARY Programs and Routines

For specific program questions which the review groups might ask, we should refer to the assignments made by Dan Lickly in LUMINARY Level IV Note #24 which is attached for reference.

#### Level III Re-Runs and Level IV Documentation

The documentation for the Level IV tests should be placed in the hands of Peter Peck as soon as possible who will mail them to MSC. The LUMINARY Level IV test descriptions, personnel assignments, and schedules are attached for reference. When you finish your Level IV test and documentation you should

re-run any Level III tests for which you were responsible on the FACI revision of the program. We would like to go into the FACI reviews with all Level III and Level IV tests re-run on the FACI revision of the program. Then, after the FACI, we could swing right into mission verification testing.

An example of how we might phase in re-runs of the Level III tests is the following: Virginia Dunbar is responsible for LUMINARY Level IV tests L4.29 and L4.30 but Virginia is scheduled to complete her Level IV test and documentation on October 25, 1968. This leaves Virginia at least ten working days to re-run her Level III (P20 and P22) tests on the FACI version of LUMINARY. This re-run should be done with two ply paper so that MSC can keep a copy of the test results. I regard these Level III re-runs as highly important because of the changes which have been made in LUMINARY since the last official running of Level III tests. (For example, the scaling of measurement incorporation has been changed since Virginia completed her Level III tests September 6, 1968.)

#### GSOP Preparation and GSOP Review

The final GSOPs should be available prior to the reviews. The review teams need the GSOPs to understand the programs and understand the test results. Some of our GSOPs are coming out rather late relative to what we would ideally like to do. Ideally, we would like to have the final GSOPs in the hands of each review team at least one week prior to the beginning of the review. Working as hard as we can, we will not quite succeed in this endeavor in each case. It is an important goal. The final GSOP schedule dates are given below with the names of the individuals responsible for their production.

| <u>GSOP</u>                                 | <u>Individuals Responsible</u> | <u>Date of Availability</u> |
|---|--------------------------------|-----------------------------|
| Section 1, Rev 0                            | Ain Laats                      | 7/12/68                     |
| Section 2, Rev 2<br>(Rev 1 avail. 10/14/68) | Ed Copps, Bob Tinkham          | 12/6/68                     |
| Section 3, Rev 0                            | Alex Kosmala, Bill Widnall     | 11/8/68                     |



| <u>GSOP</u>       | <u>Individuals Responsible</u>               | <u>Date of Availability</u> |
|-------------------|--|-----------------------------|
| Section 4, Rev. 1 | Ed Copps, Walker Kupfer<br>Jack Shillingford | 11/4/68                     |
| Section 5, Rev 1  | Bill Marscher, et al                         | 11/1/68                     |
| Section 6, Rev 0  | Alex Kosmala, Keith Glick                    | 9/3/68                      |

#### Feedback From MSC on the Level IV Edit Programs and Run Printout

You are currently sending copies of your level IV tests to MSC (via Peter Peck). These are reaching the Level IV review teams and their chairmen. There may be some feedback from these MSC personnel in the next week or so requesting numbers not shown in your program printout or edit run. Please try to comply with any such requests.

#### Future Information on the FACI

I will give you more information later about how the FACI reviews will be conducted and about the FACI report itself. In the meanwhile, I want to emphasize the following:

1. Be available for conference with the MSC personnel during the dates of the FACI review. 11 November 1968 to 15 November 1968 and possibly 18 November 1968 to 22 November 1968.
2. Try to finish your Level IV tests and documentation on time. They will be perused within a week - in most cases - of the time you are scheduled to finish.
3. Re-run your Level III tests - on two ply paper - on the then current revision of LUMINARY.
4. Be prepared to discuss each anomaly in your area of responsibility and to help formulate program notes on the programs for which you are responsible.
5. If you are responsible for a GSOP, try to be on time. We are cutting it very fine in some cases.
6. If you work in 23B and have been asked to contribute to GSOP Section 2 or review Section 4 or 5, please consider this as great a responsibility as all your other responsibilities.

Distribution

C. Tillman GAEC  
D. Portnoy GAEC  
T. Gibson FS5  
J. Williams FS5  
T. Price FS5  
S. Ankney FS5  
S. Mann FM7  
W. Peters EG23  
F. Bennet FM6  
R. Nobles FM7  
R. Savely FM4  
R. Regelbrugge FM6  
C. Hackler EG2  
R. Ragan  
L. Larson  
D. Hoag  
R. Battin  
N. Sears  
E. Copps  
A. Kosmala  
D. Lickly  
J. Nevins  
F. Martin  
W. Widnall  
P. Peck  
J. Saponaro  
J. Vella  
M. Besas  
M. Hamilton  
W. Ostanek  
R. Wadsworth  
I. Beilin  
H. Chasan  
E. Korngold  
L. Drane  
R. Dion  
W. Pickford  
R. Dion  
C. Pu  
D. Moore  
T. Kornreich  
C. Braunhardt

D. Keene  
P. Weissman  
R. Covelli  
D. Eyles  
B. Kriegsman  
D. Gustafson  
A. Klumpp  
L. Berman  
W. Bernikowich  
P. Philliou  
R. Morth  
P. White  
J. Goode  
W. Tempelman  
P. Volante  
P. Kachmar  
J. Kernan  
G. Levine  
D. Millard  
G. Muller  
C. Schulenberg  
P. Fagin  
M. Albert  
A. Laats  
G. Edmonds  
E. Grace  
L. Johnson  
R. Tinkham  
W. Kupfer  
J. Shillingford  
K. Glick  
D. DeWorlf  
V. Dunbar  
T. Crocker  
J. Connor  
P. Adler  
F. Gauntt  
P. Rye  
G. Cox  
R. Wiggins  
S. Hatch  
N. Fisher  
K. Griggs  
C. Carroll